STANDARDS CHANGES CATALOG (SCC)

SCC NUMBER: SCC #128 ~~R1~~~~R2~~R3

CHANGE PROPOSAL TITLE: Miscellaneous corrections to Exchange Network Parameters (XNP)

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AFFECTED DOCUMENTS: This change is for MIL-STD-188-220C.

PRECEDENCE: Routine

RECOMMENDATIONS: ~~(~~None~~)~~

RECORD OF PROCESSING

DATE:	ACTION:
8 July 02	Proposal
25 Sep 02	Work Item
29 Sep 02	~~Proposal~~ Draft (R1)
26 Dec 02	~~Proposal~~Draft (R2)
15 Jan 03	(R3) Approved for 188-220C

1. STATEMENT OF THE PROBLEM: There are numerous errors in the messages used for XNP.

2. PROBLEM ANALYSIS: Some messages and operation descriptions still contain information pertaining to distributed operations, which is no longer supported by XNP. In addition, there are miscellaneous errors.

3. PROPOSED SOLUTION: Make the following changes.

    a. Appendix E, Paragraph E.4.2.3 and Table XXIV, Join Reject message. Change as shown below. Also change Appendix B to reflect changes in Appendix E.

E.4.2.3 Join reject. The Join Reject message (Table XXIV) is sent by a network controller when entry to the network has not been approved. The Join Reject should be interpreted as being applied to the station identified in the Station Identifier field. Join Reject messages originated by any station other than a network controller (e.g. improper network controller designation) should be discarded and ignored.

The Join Reject message is sent in response to the Join Request message when the reason for rejection is that the parameters provided are not presently acceptable in this network. An error indication is provided with the Join Reject to clearly identify the unacceptable parameter(s). This error indication may be data block 13, which lists the unacceptable parameters and/or one or more other data blocks correcting the unacceptable parameter(s). Unless the joining station can correct the error(s), entry via XNP is not possible.

TABLE XXIV. Join reject message

OCTET	FIELD IDENTIFICATION	VALUE
1	Message Number: Identifies specific message content.	22
2	Message Length: Indicates the length of the Join Reject Message block in octets.	7
3	Parameter update Identifier: A number to uniquely identify the latest parameter values distributed for use in the network	1-255 in increments of 1
4-7	Station Identifier: Identifies the station trying to join the network.	Unique identifier for the station

Distributed mode allowed multiple controllers to provide link addresses resulting in duplicate link addresses. Since distributive mode is no longer covered in XNP, there is no need to include a rejection for a duplicate link address. A unique address is provided with the centralized mode in the Join Accept.

    b. Appendix E, paragraph E.4.2.5, last subparagraph, page 301. In line 2, delete "and DRNR".

The Unnumbered Receive Not Ready (URNR) is sufficient to indicate that the sending station cannot receive Information (I), Decoupled Information Acknowledged (DIA) and Unnumbered Information Protocol Data Units (UI PDUs).

c. Appendix E, page 306, TABLE XXXIII. MAC parameters. Change the Field Identification in Octet 2 as shown below.

Length: Indicates the length of the MAC Parameters block in octets.

The title was changed in a previous SCC from Hardware to MAC.

d. Appendix E, page 316, paragraph E.5.3. Change as shown below.

E.5.3 Network Access. MIL-STD-188-220 allows…same method. If the station…access method. In the case…a random method (R-NAD or RE-NAD) shall be used for the Join Request method. When R-NAD is used, the default number of stations shall be 7 unless the actual number is known.

The default of 7 is adequate for use until the actual number is known.

e. Appendix E, page 317, paragraph E.6.1, third subparagraph. Change as shown below.

~~.~~ When the joining station receives a Join Accept message response from the network controller, it shall broadcast a Hello message announcing entry to the network. Other members of the network shall update their topology tables upon receipt of the Hello message.

A network controller may send a Join Reject to remove any station from the network at any time. ~~.~~ Other members of the network shall update their topology tables upon receipt of the Join Reject message.

When a station leaves a network, it shall send a Goodbye message. Other members of the network shall update their topology tables upon receipt of the Goodbye message.

The Join Accept no longer contains an address map for selection by the joining station, but rather assigns the actual data link address.

Appendix E, page 317, section E.6.2. Change as shown below.

E.6.2 Procedures for joining a network . The procedure for joining a network is depicted in Figure 43. To simplify the discussion and the figure, Join Reject and Parameter Update messages discussed in the basic Joining Concept are not included.

XNP is only used with centralized network control. Therefore there is no reason to specify centralized in paragraph headings. That was done originally because there were both centralized and distributed operations and distributed operations were removed in a previous SCC.

f. Appendix E, page 318, FIGURE 43. Delete "centralized" in the title.

XNP no longer supports anything but centralized network control.

g. Appendix E, page 318 (bottom of page), section .E.6.2, subparagraph 4. Change as shown below.

All network members that receive the globally addressed Join Request message, and intend to participate in the joining … back to the joining station. The Join Accept message shall specify the data link address of the joining station.

The Join Accept message specifies the data link address to be used, there is no choice provided to joining station.

h. Appendix E, page 319, section E.6.2. Change as shown below.

The joining station shall expect … to contact the network controller.

When the joining station receives a Join Accept message response from the network controller, it shall prepare a Hello message announcing entry to the network. The Hello message shall use the joining station's assigned data link address (provided in the Join Accept message) as the source address and shall include both the forwarder's data link address and the Global multicast address as destinations in the UI frame. The UI frame carrying this Hello message shall have the P-bit set.

The Join Accept provides the link address and does not provide a list.

i. Appendix E, page 319, section E.6.4.1. Change as shown below.

E.6.4.1 Fully connected network. In this example, the network controller is in direct line of sight to the joiner. The network is using data link Type 1 only and is using DAP-NAD. The joining station has all optional capabilities. Therefore the sequence of events is shown in Figure 44 and is described in section E.6.4.1.1. Detailed message formats are provided in section E.6.4.1.2.

XNP is only used with centralized network control. Therefore there is no reason to specify centralized in paragraph headings. That was done originally because there were both centralized and distributed operations and distributed operations were removed in a previous SCC.

j. Appendix E, FIGURE 44, page 320. Delete "centralized" in title.

Centralized is the only mode used in XNP.

k. Appendix E, section E.6.4.2. Change as shown below.

E.6.4.2 Disconnected joiner. In this example, the network controller is not in direct line of sight to the joiner. The network is using …

XNP is only used with centralized network control. Therefore there is no reason to specify centralized in paragraph headings. That was done originally because there were both centralized and distributed operations and distributed operations were removed in a previous SCC.

l. Appendix E, FIGURE 45, page 335. Delete "centralized" in title.

Centralized is the only mode used in XNP.

m. Appendix B, page 246. Delete the item 405.2.2.3.a on page 246, appendix B.

405.2.2.2	Join Accept	E.4.2.2	O	Yes__ No__	
405.2.2.3	Join Reject	E.4.2.3	O	Yes__ No__	
~~405.2.2.3.a~~	~~When a station receives a Join Reject message, the station identified in the Station Identifier field shall be removed from its topology tables unless it is a static node (link quality is 7)~~	~~E.4.2.3~~	~~405.2.2.3:M~~	~~Yes__ No__~~	
405.2.2.4	Hello Message	E.4.2.4	405.2:M	Yes__ No__	

n. Reflect the change (Refer to 3.d. in the SCC) in section E.5.3 in appendix B on page 231. Delete ***"another"*** and add ***"the actual"***.

405.3.3.c	**When R-NAD is used, the default number of stations shall be 7 unless the actual number is known.**	**E.5.3**	**202.4.1:M**	**Yes___ No___**	

o. Reflect the change (Refer to 3.e. in the SCC) in section E.6.1 in appendix B, item 405.4.1.a on page 231. Delete the part of the sentence referring to selection of a data link address from the address bit map.

405.4.1.a	When the joining station receives a Join Accept message response from the network controller, it shall ~~select a data link address from the address bit map and~~ broadcast a Hello message announcing entry to the network	E.6.1	405.2:M	Yes__ No__	

~~o.~~p. Appendix B, page 231. Change item 405.4.1.d by deleting "to announce that the data link address is available for use by another station."

405.4.1.d	When a station leaves a network, it shall send a Goodbye message ~~to announce that the data link address is available for use by another station~~	E.6.1	405.2:M	Yes__ No__	

~~p.~~q. Appendix B, page 231. Change item 405.4.2 by deleting "with Centralized Network Control."

405.4.2	Procedures for Joining a Network ~~with Centralized Network Control~~	E.6.2	405.2:M	Yes__ No__	

~~q.~~r. Appendix B, page 233. Change item 405.4.2.i from ~~.~~specifying a list of unused data link addresses to specifying the data link address of the joining station.

405.4.2.i	**The Join Accept message shall specify the data link address of the joining station.**	**E.6.2**	**405.2:M**	**Yes___ No___**	

~~r.~~s. Appendix B, page 233. Change item 405.4.2.n. to reflect the change to appendix E (refer to SCC paragraph 3.h.) as shown below.

405.4.2.n	**The Hello message shall use the joining station's assigned data link address (provided in the Join Accept message) as the source address and shall include both the forwarder's data link address and the Global multicast address as destinations in the UI frame.**	**E.6.2**	**405.2.2.4:M**	**Yes___ No___**	

~~s.~~t. Appendix B, page 234. Change item 405.4.4.1. to reflect the change to appendix E (refer to SCC paragraph 3.i.) as shown below.

405.4.4.1	~~Centralized Network Control,~~ Fully Connected Network	E.6.4.1	405.2:M	Yes__ No__	

~~t.~~u. Appendix B, page 234. Change item 405.4.4.2 to reflect the change to appendix E (refer to SCC paragraph 3.k) as shown below.

405.4.4.2	~~Centralized Network Control,~~ Disconnected Joiner	E.6.4.2	405.2:M	Yes__ No__	

4. ALTERNATIVE SOLUTIONS: None.

SYSTEM CHANGES REQUIRED: None. ~~XNP has not been implemented by any system at present time. System changes would be required if XNP had been implemented.~~

5.

6. CONFIGURATION ITEM DOCUMENTATION CHANGES: MIL-STD-188-220C.

7. IMPACT ON INTEROPERABILITY: Improves interoperability.

8. IMPACT ON RELATED DOCUMENTS: None.

9. IMPLEMENTATION DATES: "To be determined".

10. OTHER CONSIDERATIONS: None.

11. REFERENCES: None.

12. TROUBLE REPORTS (TRs) ADDRESSED IN THIS SCC: None.